

ENGINEERING STATEMENTBackground

Logos Broadcasting Corporation has retained the services of R.L. Kennedy & Associates to determine if a noncommercial educational FM Broadcast station could be constructed in accordance with the rules of the Federal Communications Commission to serve the community of San Luis Obispo, CA and, if so, to prepare the engineering portion of an application to that agency for authority to construct such a facility. This engineering statement supports an application to construct an equivalent Class B facility on Channel 207B (89.3 MHz) with an effective radiated power of 3.7 kilowatts circularly polarized at a height of 499 meters above average terrain.

Allotment Conditions

A study was initiated to determine which of the reserved channels (201 to 220) could be operated within the constraints set forth in CFR 47 Section 73 Subpart C. Only operation of Channel 207 was found to be consistent with operation of FM radio and Channel 6 television broadcast facilities authorized or allotted by the Commission. (See attached FM Spacing Study exhibit.)

Exhibit E-4 attached shows the predicted F(50,50) 60 dBu protected contours and the appropriate predicted F(50,10) interference contours for the proposed operation and the most significant authorizations on the seven FM channels from 204 to 210. Neither interference to nor interference from any of the existing authorizations is expected as a result of the proposed operation.

The nearest authorization and/or allotment for facilities subject to possible IF interference are KTYD, Channel 260B, Santa Barbara, CA (133 kilometers distant) and a proposed allotment to Guadalupe, CA (40 kilometers distant). Both exceed the respective distances of 20 and 15 kilometers set forth in 47 CFR Section 73.207(b)(1).

The instant application is mutually exclusive with that of KCBX, Inc. (File Number BPED-890619MH) to construct a facility using the same channel at the same site.

Television Channel 6 Considerations

The instant proposal will be colocated with KSBY-TV, serving San Luis Obispo, CA on television Channel 6. 47 CFR Section 73.525(d)(2) prescribes coordination of the proposed antenna with that of the affected TV station using the same number of bays separated by no more than 30 meters vertically or use of an FM antenna whose vertical pattern does not exceed that of the TV antenna by more than 2 dB.

A four bay FM antenna was selected for the instant proposal in an attempt to closely match the vertical pattern of the RCA TF-4BM antenna used by KSBY-TV. An available location 43 meters below the Channel 6 antenna was chosen inasmuch as insufficient space exists within 30 meters of the Channel 6 antenna.

Analysis of the vertical patterns of the TV and FM antennae reveals that the relative field of the FM antenna exceeds that for the TV antenna by 2 dB at some depression angles greater than 7 degrees. The proposed ERP of 3.7 kW is approximately 5.1 dB below the maximum limit of 12 kW for an FM operation on Channel 207 as set forth in 47 CFR Section 73.525(d)(1). Considering the 5.1 dB reduction from maximum permitted ERP, the radiated power from the instant proposal would not appear to exceed the criteria used by the FCC in determining the above requirements at depression angles less than approximately 10.5 degrees, close to the 12 degree first null of the TV antenna.

Assuming flat terrain at average elevation, the radiated energy from the proposed FM facility would exceed the criteria at a point approximately 3 km from the antenna site. There is no known population center within 3 km of the mountain-top transmitter site in the Los Padres National Forest. The closest concentration of population appears to be at Santa Margarita approximately 5 km to the northeast. Assuming the elevation of Santa Margarita to be approximately 1200 feet AMSL throughout the community (at a depression angle of approximately six degrees), the energy radiated from the instant proposal would be approximately 3.7 dB below the criteria.

The principal community of San Luis Obispo (approximately 300 feet AMSL) is from about 7 to 11 km away and lies at depression angles of from 2.5 to 4 degrees where the radiated energy would be approximately 5.5 dB below the criteria.

It is the opinion of the writer that there will be no adverse affect upon reception of KSBY-TV due to implementation of the instant proposal. However, the applicant recognizes its responsibility in the resolution of unanticipated interference problems that may occur.

The management of KSBY-TV has not reviewed the above analysis but has written a letter of conditional concurrence with the operation of the proposed facility (attached as Exhibit E-5).

Other Interference Considerations

The predicted blanketing contour resulting from operation of the proposed facility, as calculated in accordance with 47 CFR Section 73.318, extends 0.76 kilometers from the transmitter site. Blanketing is not considered to be a problem in residential reception inasmuch as the site is located on Cuesta Peak several kilometers from residential areas.

Cuesta Peak, however, is the site of several electronic facilities in addition to KSBY-TV. These include several FM broadcast and four TV translator facilities located either on the KSBY-TV tower or approximately 105 meters toward the west. They are:

KSBY-TV	KSBY tower
KLXX(FM)	KSBY tower
KKUS(FM)	KSBY tower
KDDB(FM)	KSBY tower
KCBX(FM)	KSBY tower
KSLY(FM)	105 m west
KZOZ(FM)	105 m west
KIQO(FM)	105 m west
KWSP(FM)	105 m west
K10FK	105 m west
K15BD	105 m west
K36AL	105 m west
K57BC	105 m west

Various auxiliaries and non-broadcast facilities.

None of the antennae for the above referenced facilities are within the aperture of the proposed antenna. The radiation center of KWSP(FM), the highest facility not colocated with KSBY-TV, is 49 meters below that of the instant proposal. It is not, therefore, anticipated that any insoluble intermodulation interference problems will result from operation of the proposal.

The applicant accepts its responsibility to resolve complaints of interference that may result from operation of the proposed facility.

Predicted Service Contour

The 1.0 mV/m service contour was predicted using the F(50,50) curves as prescribed in 47 CFR Section 73.313. No consideration was given to terrain roughness correction factors. (See Exhibit E-3).

The average elevations between 3 and 16 kilometers from the proposed site in eight evenly spaced radial directions were taken from information on file with the Commission for KSBY-TV and other colocated FM facilities.

The predicted 1.0 mV/m service contour encompasses 5605 square kilometers of land area as determined by use of a calibrated polar planimeter. 1986 update data to the 1980 census indicate that 210,055 persons reside within the predicted 1.0 mV/m service contour.

Environmental Considerations

The instant proposal involves no new construction or major modification of existing structures at an existing electronics site and, therefore, does not fall within any of the categories set down in 47 CFR 1.1307(a).

With regard to 47 CFR 1.1307(b), an evaluation was made to determine compliance with the standards for human exposure to RF radiation as set forth in OST Bulletin Number 65 dated October 1985. Considering an effective radiated power of 7.4 kW (total power radiated circularly polarized) with a radiation center 87 meters above ground level, the contribution of the proposed operation to the power density of radio frequency energy at two meters above ground is calculated to be 5 uV/cm², less than one percent of the ANSI C95.1-1982 guideline adopted by the Commission. Simultaneous operation of all the authorized facilities at the site results in total radio frequency power density calculated to be approximately 21 percent of the guideline.

Following construction of the proposed facility, the applicant will take measurements to verify compliance with the guidelines in the area immediately surrounding the site and to determine the actual increase in power density caused by implementation of the proposal. Further, appropriate policies and procedures will be established in concert with licensees of the other authorized facilities to assure that workers climbing the tower in the course of their duties will not be exposed to fields exceeding the guidelines.

Transmission System

The transmission system will consist of a 4 bay circularly polarized antenna side mounted at the 87 meter level of the existing 122 meter guyed tower used by KSBY-TV. The antenna will be fed by an FCC type-accepted transmitter through 99 meters of 7/8 inch coaxial transmission line.

The transmitter will be housed in the KSBY-TV transmitter building and will be remotely controlled from the main studio location using conventional equipment and techniques. The installation and operation of the system will be in compliance with the requirements of the Commission.

Conclusion

The proposed facility will be in compliance with the Commission's Rules and the predicted service contour encompasses the principal community of San Luis Obispo, CA.

Certification

The undersigned hereby certifies that he is a graduate engineer, that he has been responsible for design of communications systems for more than 40 years, and that this Engineering Statement was prepared by him or under his immediate direction. Under penalty of perjury he declares that all statements of fact contained herein which are based on his personal knowledge are true and that other statements not known of personal knowledge are believed to be true.


Richard L. Kennedy

6 June 1990

R.L. KENNEDY & ASSOCIATES

Consulting Radio Engineers

LOGOS BROADCASTING CORP

SUMMARY OF ENGINEERING PARAMETERS

Proposed Operation on FM Channel 207 (89.3 MHz)

Antenna Site (existing KSBY-TV transmitter site):

35 - 21 - 37 North
120 - 39 - 17 West

Significant Elevations:

Elevation of site AMSL	745.2	m
Overall elevation of supporting structure	139.9	m
Overall elevation AMSL	885.1	m
Elevation of average terrain AMSL	332.8	m
Elevation of radiation center above site	87.0	m
Elevation of radiation center AMSL	832.2	m
Elevation of radiation center AAT	499.4	m

Derivation of ERP and TPO values:

Class contour distance for Class B facility	52	km
Antenna HAAT	499	m
ERP to achieve class contour distance	3.7	kW
Antenna gain (H & V)	2.13	
Transmission line efficiency	.77	
TPO required for equivalent Class B facility	2.25	kW

Major Equipment List

Harris Model FM-3.5K transmitter
Andrew HJ5-50, 7/8" air dielectric Heliax (99 meters)
Harris FML-4E antenna mounted on existing guyed tower

R.L. KENNEDY & ASSOCIATES

Consulting Radio Engineers

R. L. Kennedy & Associates
Waynesville, NC

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May 26, 1990

FM Spacing study

Title: Logos Broadcasting Corporation
Channel 207B (89.3 MHz)

Latitude: 35-21-37
Longitude: 120-39-17

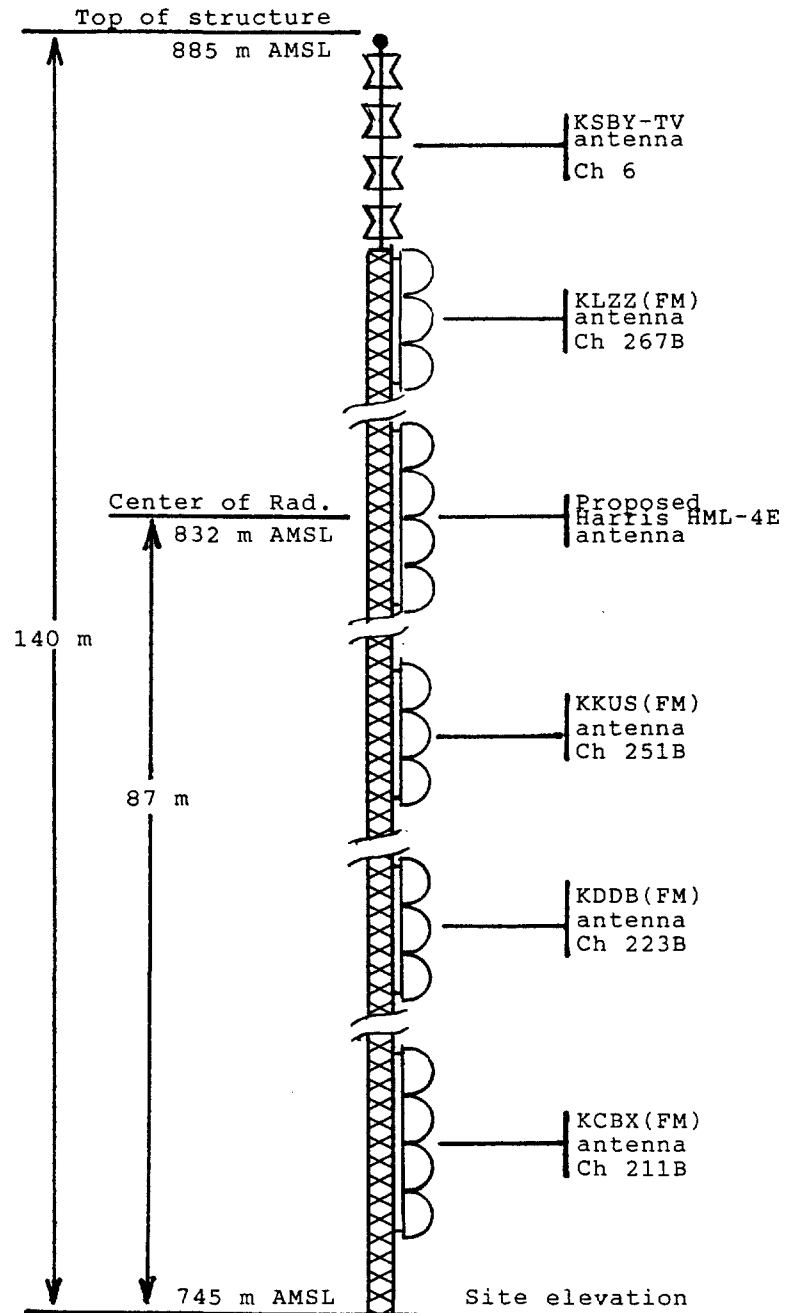
Call	Auth	Licensee name	Chan	ERP-kW	Latitude	Br-to	Dist.	Req.
City of License	St	FCC File no.	Freq	EAH-m	Longitude	-from	(km)	(km)
KSBY-TV LIC	CA	KSBY INC	6	100	35-21-37	0		196
SAN LUIS OBISPO	CA		85.0	543	120-39-17	.0	-196	SHORT
KFAC LIC	CA	Evergreen Media Corporat	*204B	12	34-27-55	137.9	133.6	74
Santa Barbara	CA		88.7	264	119-40-37	318.4	59.58	CLEAR
KUSP LIC	CA	PATAPHYSICAL BCG FOUNDAT	*205B	.86	36-32-05	326.6	156.8	74
SANTA CRUZ	CA	BLED-1275	88.9	771	121-37-14	146.1	82.76	CLEAR
KPRX LIC	CA	WHITE ASH BROADCASTING I	*206B1	11.5	35-29-10	84.5	161.0	145
BAKERSFIELD	CA	BLED-870219KB	89.1	152	118-53-20	265.5	15.97	CLOSE
NEW APP	CA	KCBX INCORPORATED	*207B	5.30	35-21-37	.0		241
SAN LUIS OBISPO	CA	890619MH	89.3	433	120-39-17	.0	-241	SHORT
KVPR-FM LIC	CA	WHITE ASH BROADCASTING I	*207B	2.45	37-04-25	29.6	219.7	241
FRESNO	CA	BLED-821108AH	89.3	575	119-25-52	210.3	-21.3	SHORT
NEW APP	CA	KCBX INCORPORATED	*208A	.22	34-27-57	137.8	133.5	113
SANTA BARBARA	CA	890530MB	89.5	256	119-40-37	318.4	20.53	CLEAR
KLVM LIC	CA	PRUNEDALE EDUCATIONAL AS	*209A	.02	36-45-22	334.1	172.6	69
PRUNEDALE	CA	BLED-860224KB	89.7	626	121-30-05	153.6	103.6	CLEAR
KFER CP	CA	SANTA CRUZ ED BCG FOUNDA	*210A	.20	36-58-48	326.5	216.8	69
SANTA CRUZ	CA	BMPED-890317I	89.9	-64	122-00-10	145.7	147.8	CLEAR
KTYD LIC	CA	CANALINO BROADCASTING CO	260B	34	34-28-15	137.7	133.2	20
SANTA BARBARA	CA	BLH-870331KP	99.9	390BT	119-40-33	318.2	113.2	CLEAR
PRM		PROPOSED RULE MAKING	261A		35-00-00	175.9	40.07	15
GUADALUPE	CA	DOC-83-834	100.1		120-37-24	355.9	25.07	CLEAR

FM Channel Study
Logos Broadcasting Corporation
Application for Construction Permit
FM Channel 207B
San Luis Obispo, CA

Engineering
Statement
Exhibit

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Existing Guyed Tower
North 35° 21' 37"
West 120° 39' 17"

Not to
Scale

Vertical Sketch
Logos Broadcasting Corporation
Application for Construction Permit
FM Channel 207B
San Luis Obispo, CA

FCC Form 340
Sec. V-B, 8
Exhibit E-1
June 1990

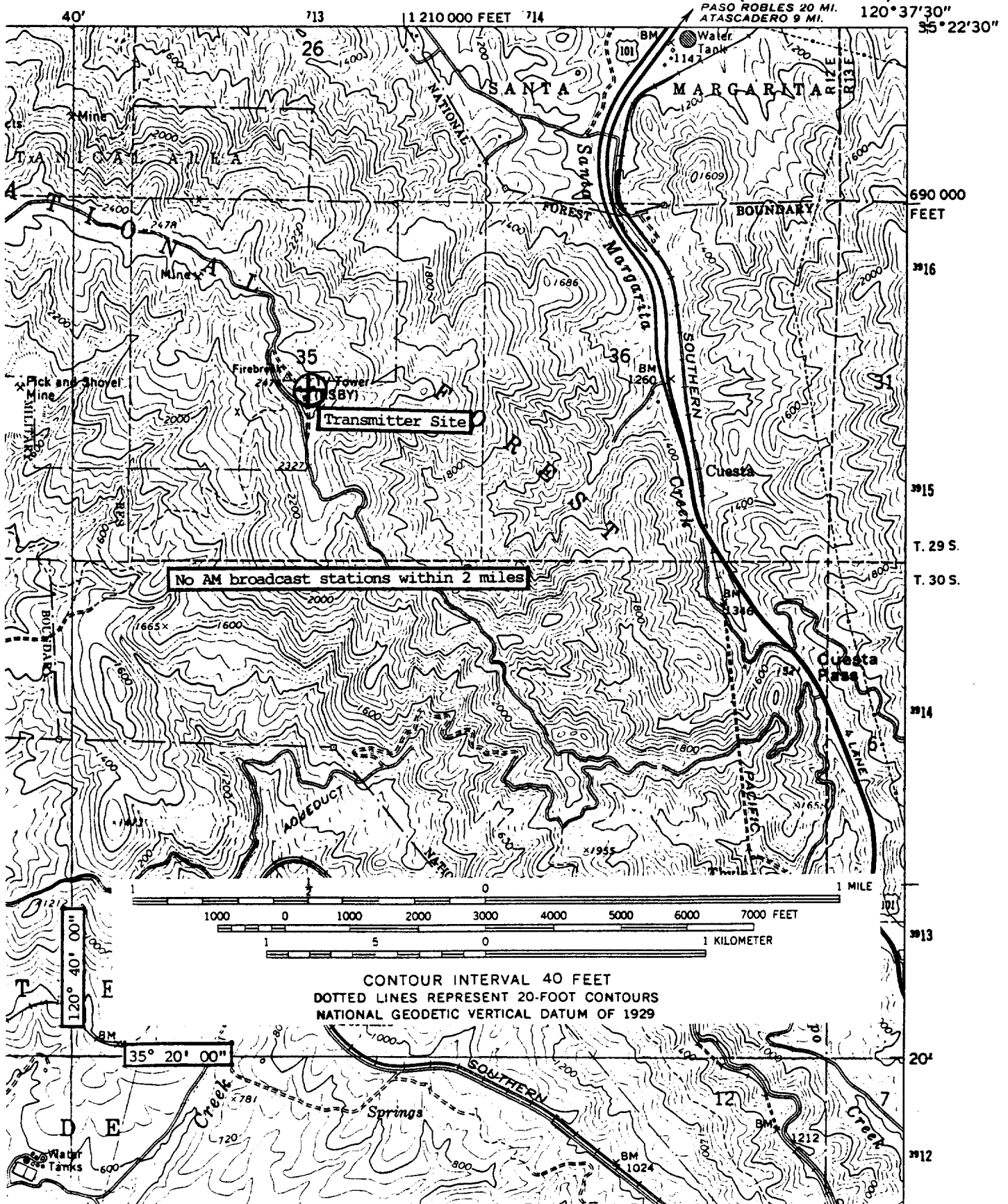
R.L. KENNEDY & ASSOCIATES

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SAN LUIS OBISPO QUADRANGLE

CALIFORNIA-SAN LUIS OBISPO CO.

7.5 MINUTE SERIES (TOPOGRAPHIC)



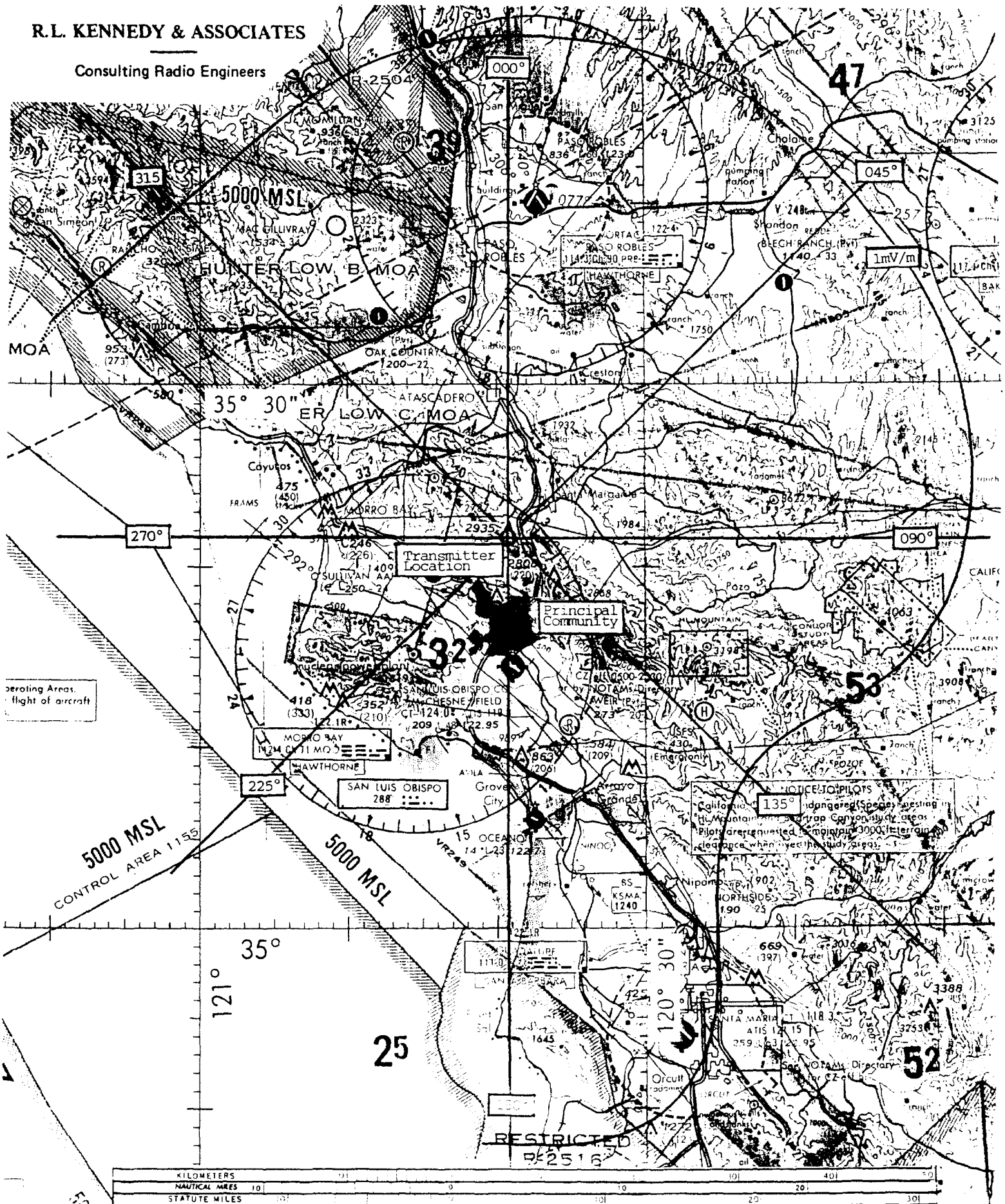
USGS 7.5'
Quadrangle
San Luis Obispo
1:24000

Transmitter Site Location
Logos Broadcasting Corporation
Application for Construction Permit
FM Channel 207B
San Luis Obispo, CA

FCC Form 340
Sec. V-B, 13
Exhibit E-2
June 1990

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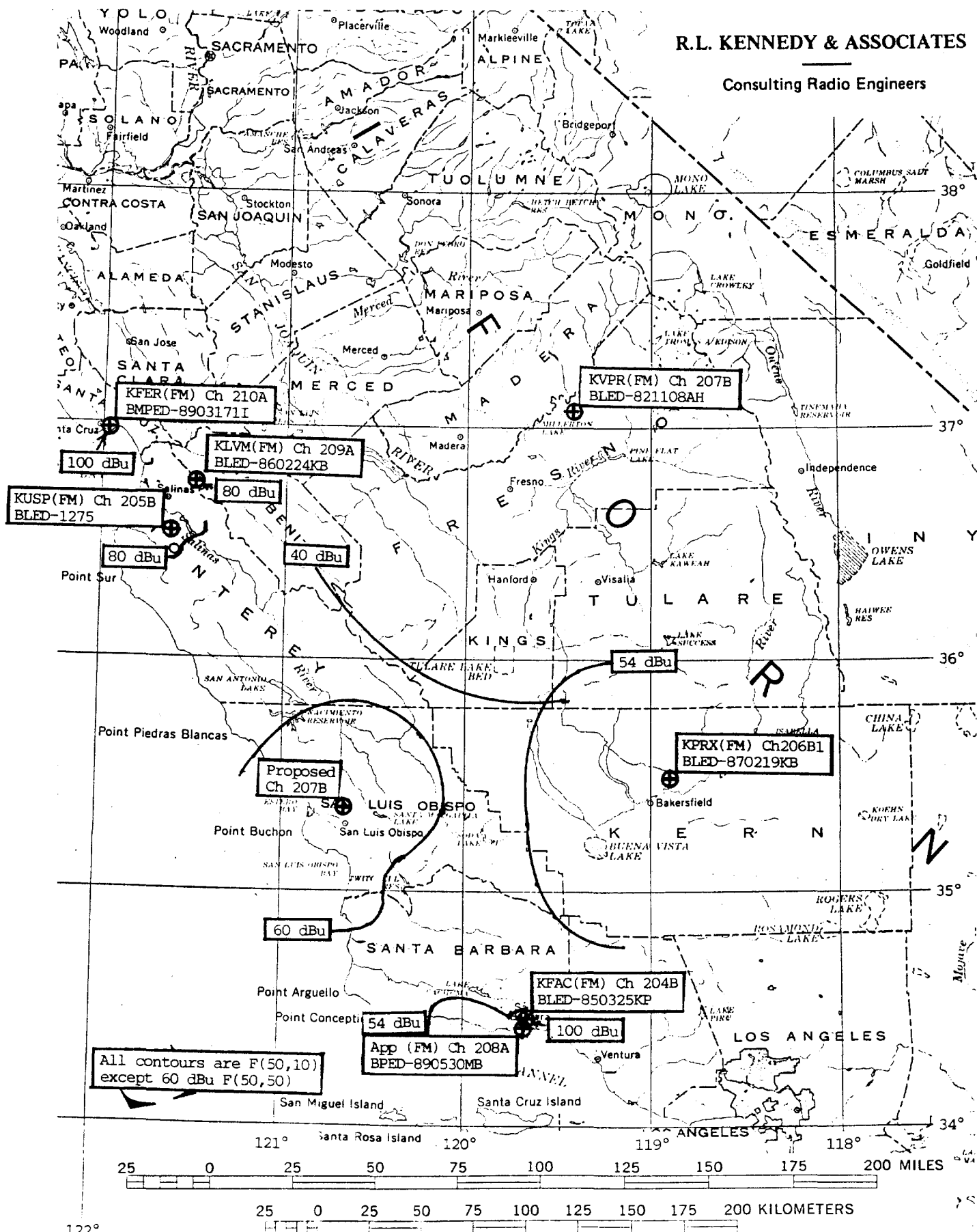
Sectional
Aero Chart
Los Angeles
1:500000

Predicted Service Contour
Logos Broadcasting Corporation
Application for Construction Permit
FM Channel 207B
San Luis Obispo, CA

FCC Form 340
Sec. V-B, 14
Exhibit E-3
June 1990

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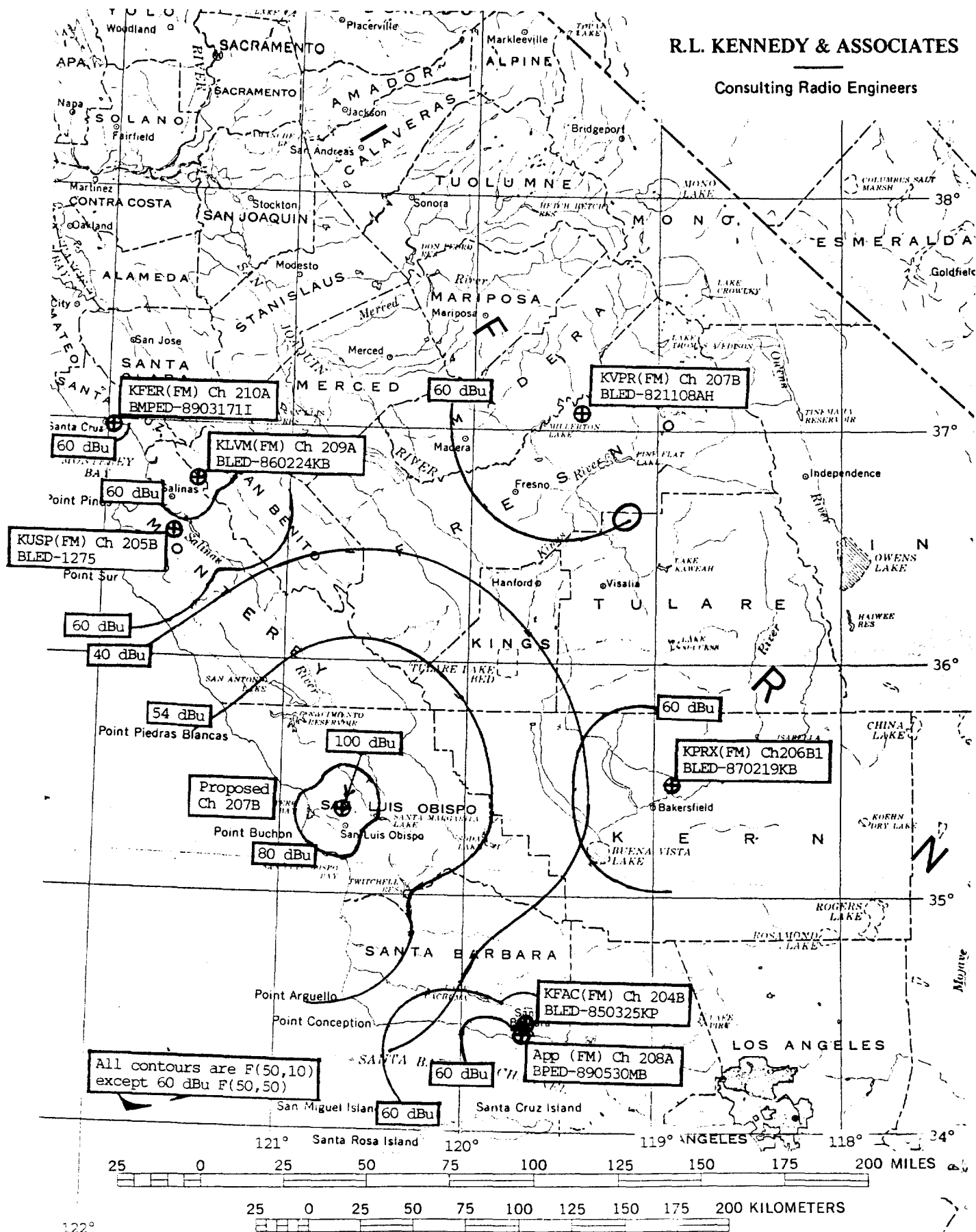
USGS Map
United States
West Half
1:2,500,000

Allocation Study
From Other Facilities Toward Proposal
Logos Broadcasting Corporation
Application for Construction Permit
FM Channel 207B
San Luis Obispo, CA

FCC form 340
Sec. V-B, 21
Exhibit E-4
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USGS Map

United States
West Half

1:2,500,000

Allocation Study
From Proposal Toward Other Facilities
Logos Broadcasting Corporation
Application for Construction Permit
FM Channel 207B
San Luis Obispo, CA

FCC Form 340
Sec. V-B, 21

Exhibit E-4
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June 1990



KSBY, Inc.
467 Hill Street
San Luis Obispo, CA 93401.
805 541 6666 93405
ext 8350

James Brodsky
Director of Technical Operations

May 31, 1990

Mr. Dan Lemburg
Logos Broadcasting Corp
480 Los Osos Valley Road
Los Osos, CA 93408

Dear Mr. Lemburg:

This will respond to your request for a letter from Station KSBY-TV concurring with the addition by Logos Broadcasting Corp. of a non-commercial educational Class B FM station on Channel 207 at Cuesta Peak. This letter is written for the purpose of satisfying the Federal Communications Commission in connection with Section 73.525 of the Rules concerning potential interference created by educational FM stations to the coverage area of Channel 6 TV stations. It should be understood that our concurrence is conditional upon the following:

1. We concur only with the specific facilities specified in your application to the Federal Communications Commission, that is to say, an effective radiated power of 3.7 kilowatts with the antenna mounted on the KSBY-TV tower.
2. Any future modifications which require a construction permit from the FCC will require a new letter from us.
3. KSBY-TV shall be notified two days in advance of the start of Equipment Tests.
4. Logos Broadcasting Corp. will arrange for an independent engineering firm acceptable to KSBY-TV to perform a field survey upon completion of the proposed construction to verify compliance with ANSI C95.1-1982 Standard for Human Exposure to radiofrequency electromagnetic fields and will institute any safety measures found necessary to achieve compliance for public exposure.
5. Programming shall not be broadcast over the new station until all reasonable complaints of interference to Channel 6 or to other site users which are triggered as a result of the equipment tests have been resolved to the satisfaction of KSBY-TV.
6. Logos Broadcasting Corp. agrees to cooperate in resolving any Channel 6 interference complaints, or complaints of interference to other site users, which occur after the commencement of regular programming from the new antenna. This includes reasonable requests for on-off tests if such tests should be deemed necessary by KSBY-TV.
7. It is understood that Logos Broadcasting Corp will comply with all pertinent FCC Rules regarding the alleviation of any interference which may be caused by its new facilities.

For KSBY-TV:

For Logos Broadcasting Corp:

Exhibit E-5

Gillett Group